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Purpose

The Economic Benchmarking RIN requires Endeavour Energy to prepare a Basis of Preparation. By this, the AER mean that for every variable in the templates, Endeavour Energy must explain the basis upon which we prepared information to populate the input cells. The Basis of Preparation must be a separate document (or documents) that Endeavour Energy submits with its completed templates. The AER will publish Endeavour Energy's Basis of Preparation along with the templates.

This document is Endeavour Energy's Basis of Preparation in relation to the Economic Benchmarking RIN required to be submitted to the AER by 2 November 2020.

Australian Energy Regulator's Instructions

The AER requires the Basis of Preparation to follow a logical structure that enables auditors, assurance practitioners and the AER to clearly understand how Endeavour Energy has complied with the requirements of the Notice.

To do this, the AER recommended that Endeavour Energy structures its Basis of Preparation with a separate section to match each of the worksheets titled '3.1 Revenue' to '3.7.3 Service area factors' in the templates.

The AER noted that Endeavour Energy may consider structuring these sections with subheadings for each subject matter table in each worksheet. For example, for the worksheet '3.4 Operational data', Endeavour Energy would explain its Basis of Preparation for the variables under the heading '3.4.1 Energy delivery', '3.4.2 Customer numbers' and '3.4.3 System demand'. Endeavour Energy's Basis of Preparation has followed this recommended structure.



Endeavour Energy must include in its Basis of Preparation, any other information Endeavour Energy prepares in accordance with the requirements of the Notice (including this document). For example, if Endeavour Energy chooses to disaggregate its RAB using its own approach in addition to the AER's standard approach, Endeavour Energy must explain this in its Basis of Preparation.

The AER has set out what must be in the Basis of Preparation. This is set out below:

1. Demonstrate how the information provided is consistent with the requirements of the Notice.
2. Explain the source from which Endeavour Energy obtained the information provided.
3. Explain the methodology Endeavour Energy applied to provide the required information, including any assumptions Endeavour Energy made.
4. In circumstances where Endeavour Energy cannot provide input for a variable using actual Information, and therefore must use an estimate, explain:
 - (i) why an estimate was required, including why it was not possible for Endeavour Energy to use actual Information;
 - (ii) the basis for the estimate, including the approach used, assumptions made and reasons why the estimate is Endeavour Energy's best estimate, given the information sought in the Notice.
5. For variables that contain financial information (actual or estimated) the relevant Basis of Preparation must explain if accounting policies adopted by Endeavour Energy have materially changed during any of the Regulatory Years covered by the Notice:
 - (i) the nature of the change; and
 - (ii) the impact of the change on the information provided in response to the Notice.

Endeavour Energy may provide additional detail beyond the minimum requirements if Endeavour Energy considers it may assist a user to gain an understanding of the information presented in the templates.

In relation to providing an audit opinion or making an attestation report on the templates presented by Endeavour Energy, an auditor or assurance practitioner shall provide an opinion or attest by reference to Endeavour Energy's Basis of Preparation.



Structure of this document

The document is structured as follows:

- We outline our general approach to developing our response to the RIN. We identify key systems used to provide data and note issues relating to data quality.
- We set out our response to worksheets 3.1 to 3.7, in accordance with the AER's instructions. We note that Worksheet 1 requires no input material.

General approach

In this section, we identify our general approach to collecting and preparing information.

A key concern of Endeavour Energy is that the AER may use information which is of a poor quality to make regulatory determinations. We note that this issue has been raised with the AER in consultations relating to this notice.

Systems used to provide data

Where methodologies or assumptions were required to complete the files other than the mere application of the AER approved CAM to the general purpose financial statements Endeavour Energy has included commentary by way of the "note" function within Microsoft Excel to provide guidance to the AER.

Below is a listing of Endeavour Energy's systems that, to a greater or lesser extent, were directly related to or supported the development of the information contained in the RIN templates:

- Cognos – Business reporting system managing database information such as organisation policies and procedures;
- Ellipse – financial management system including: accounts payable; payroll; asset and equipment registers and financial reporting functions. The Ellipse system also caters for defect management (condition based) and also routine maintenance (planned). The equipment register is also linked to various other supporting systems such as field inspections and the Geographical Information System (GIS);
- TM1 – Endeavour Energy uses this OLAP tool for various purposes including budgeting and forecasting, monthly reporting and regulatory accounts allocations. It is a cube-based technology which allows rules to be created between cubes and within cubes;
- eFrams – Endeavour Energy uses this system in relation to IT Allocation Drivers. The system enables access to all telecommunication billing, inventory management/asset register and reporting;
- Remedy - Endeavour Energy uses this system in relation to IT Allocation Drivers. This is a BMC tool used by CGI for asset management, definitive software library, incident management and service request management;



- Autocad - Endeavour Energy uses this system in relation to Property Drivers. This is a program used for computer-aided design and drafting. The program is used to maintain Floor Plans which can be used to summarise occupancy by business unit;
- Banner – Endeavour Energy’s customer database and billing system;
- Figtree – Worker’s compensation claims management data base. This system is maintained separate (but linked at aggregate levels) to other systems to maintain confidentiality of data as required by legislation;
- Value Development Algorithm (VDA) – Endeavour Energy uses the Value Development Algorithm (VDA) for its high-level asset renewal expenditure modelling. The model is populated with specific asset data in order to produce the replacement capital forecast. Data for each asset is allocated into asset categories, which represent major components that make up the network such as poles, transformers, conductor, cable, switchgear etc. Each asset type is assigned an asset life and a replacement cost. The quantity of assets installed on the network each financial year is also entered, thus generating an age profile of the network assets;
- Visual Risk – Endeavour Energy uses this in-house Treasury Management System for improving the productivity of its treasury operations. Visual Risk provides functions such as capturing a facility drawdown; valuing an FX option; and facilitating back office administration and financial reporting. Specifically, it was used to prepare the cost of funds schedule;
- System Fault Recording (SFR) – Endeavour Energy uses this Oracle database system for all reliability reporting. The data in this system is accessed using Cognos, with further analysis and processing of data being undertaken using Microsoft Office programs such as Access and Excel;
- SCADA - Endeavour Energy uses this system to monitor and control its network. This system is used to identify and register an event such as a plane strike on the network;
- Outage Management System - Endeavour Energy uses this system to log outages on its network, with the point of contact being from external sources. This system can also be used to identify events where these are externally identified;
- Contact Centre 6 – Endeavour Energy’s call centre uses this system to run reports on historical call volume according to skill set (Call Type). The system is also used to assign agents to specific call taking groups based on call type.

Data quality issues

In previous consultations on the Economic Benchmarking RIN, we have raised significant concerns with providing historical data in the form required by the AER.

Approach to our obligations under the NEL

Our view of the NEL is that a DNSP is only obligated to provide information that is available, that is, data which has been historically collected in our systems. In cases, where that information cannot be provided in the form required by the AER from our systems, we would have a reasonable excuse under section 28(5) of the NEL not to comply with that element of the notice. We have strong doubts that a RIN can



require a business to prepare information by way of estimate that cannot be reasonably derived from information currently held in its systems.

Our understanding of the term 'prepare' relates to a power the AER has to compel a DNSP to collect information in the form required by the AER for future periods (for example, by developing new systems) rather than to manipulate historical data in potentially inaccurate ways. We suggest that the AER should give more careful consideration to whether it has appropriately informed itself of the distinction under section 28D of the NEL between the ability of a RIN to require existing information to be provided and the ability to require information to be prepared, maintained and kept on a going forward basis.

Despite this Endeavour Energy has prepared and included the estimated data on an unaudited basis.

Recognition by AER that 'best estimates' are not robust

The AER has acknowledged that if we are compelled to provide best estimates then there is potential for the data to lack robustness.

Reliability of applying data to economic benchmarking

We consider that the application of economic benchmarking to guide regulatory decision making would result in error, leading to outcomes that are detrimental to the long-term interests of customers. Our view is based on the following reasons:

- As noted in the sections on data quality, there is recognition by the AER that data quality from best estimates will not be of a robust quality and may not pass audit and reviews. This document identifies where material has been developed from best estimates and the confidence we have in that data. We note in this respect that models such as Total Factor Productivity (TFP) are based on the interaction of multi-variables. If a data series is inaccurate, it can significantly alter the findings of the model and lead to misleading conclusions.
- We are not convinced that economic benchmarking tools such as TFP can be used to infer relative efficiency of DNSPs over time. We consider that the models cannot adequately normalise for differences between DNSPs, and do not provide meaningful assessment of the apparent differences in productivity levels. For example, TFP will show that a firm that replaces ageing assets has declining levels of capital productivity, as the model would show higher prices for capital while maintaining existing service levels. In our view this would be driven by the age of the asset base which is likely to vary between DNSPs.
- We consider that economic benchmarking models such as TFP do not provide the AER with guidance on how to target its review of expenditure forecasts, as the information provided is at too high a level to identify potential areas of efficiency. The models and data collected will not provide any guidance on the underlying drivers of apparent productivity, and therefore does not provide useful analysis on which areas to review in a DNSP's capex and opex forecasts.



• 3.1 Revenue

3.1 Revenue

3.1.1 Revenue grouping by chargeable quantity and 3.1.2 Revenue grouping by customer type or class

Compliance with requirements of the notice

The data presented in tables 3.1.1 and 3.1.2 is consistent with the requirements of the Economic Benchmarking RIN. In particular:

- Total revenue reported in tables 3.1.1 and 3.1.2 is equal and reconciles to revenue reported in the Annual RIN. Specifically, total Standard Control Services revenue reconciles to the distribution revenue as reported in the Annual RIN. In addition, total Alternative Control Services revenue reconciles to the total of revenue from maintenance of Public Lighting Maintenance, Metering Services and Ancillary Network Services as reported in the Annual RIN;
- Revenue from unmetered supplies is identical in tables 3.1.1 and 3.1.2;
- Revenue presented in table 3.1.1 reflects revenue earned by chargeable quantity in accordance with the category breakdowns as per the definitions provided in chapter 9 of the Economic Benchmarking RIN Instructions and Definitions. Revenue categories DREV0101 to DREV0109 in table 3.1.1 reflect Distribution-Use-Of-System ('DUoS') revenue earned from customers by chargeable quantity. "Revenue from Other Sources" (DREV0113) reflects Ancillary Network Services revenue reported in the Annual RIN; and
- Revenue presented in table 3.1.2 reflects revenue earned by customer type or class in accordance with the category breakdowns as per the definitions provided in chapter 9 of the Economic Benchmarking RIN Instructions and Definitions. "Revenue from Other Customers" (DREV0206) reflects all Alternate Control Services revenue (i.e. total of revenues from Public Lighting Maintenance, Metering Services and Ancillary Network Services), whereas all other categories in table 3.1.2 reflect DUoS revenue earned from customers by customer type or class.

Source of information

DUoS revenue information (DREV0101 to DREV0109 in table 3.1.1 and DREV0201 to DREV0205 in table 3.1.2) used to populate the tables contained in section 3.1 was extracted directly from TM1. Endeavour Energy uses this OLAP tool for various purposes including budgeting and forecasting, monthly reporting and regulatory account allocations and it has been used historically to provide data for previous audited RINs. It is a cube-based technology which allows rules to be created between cubes and within cubes. More specifically, DUoS revenue information was extracted from the TM1 NUoS cube which is used by Endeavour Energy to store, analyse and report data related to energy volumes, customer numbers and demand KW/kVA and calculate associated revenue outcomes (i.e. energy revenue, NAC revenue and demand revenue) at the network tariff level. It is the primary tool used to calculate the month end revenue accrual and report on month end results and is also used extensively for budgeting and forecasting revenue related items.

Non-DUoS revenue information (DREV0110 to DREV0113 in table 3.1.1 and DREV0206 in table 3.1.2) was extracted directly from the Annual RIN.

3.1 Revenue

Methodology and Assumptions

The following table sets out the methodology applied to obtain required data for each of the tables in section 3.1.

Table	Methodology	Assumptions
3.1.1 & 3.1.2 DUoS Revenue	<ol style="list-style-type: none"> 1. DUoS revenue data was extracted from the TM1 NUoS cube by network tariff and by revenue type (i.e. NAC revenue, demand revenue and peak, shoulder, off-peak and Non TOU energy revenue). 2. Total DUoS revenue derived at the individual network tariff level was reconciled to the total from the TM1 NUoS cube to ensure no network tariffs were excluded. 3. Total DUoS revenue from TM1 was reconciled to DUoS revenue reported in the Annual RIN. Material variances (greater than 1%) were investigated and resolved and adjustments made where required. The variances between DUoS revenue in TM1 and DUoS revenue as reported in the Annual RIN was added to 'Revenue from Energy Delivery charges where time of use is not a determinant' (DREV0102) in table 3.1.1 and 'Revenue from residential Customers' (DREV0201) in table 3.1.2 to ensure total DUoS revenue reconciled to the Annual RIN. 4. DUoS revenue line items in table 3.1.1 (DREV0101 to DREV0109) and table 3.1.2 (DREV0201 to DREV0205) were populated from the detailed TM1 NUoS cube data in accordance with the Benchmarking RIN Instructions & Definitions. <p><i>Note: Given TM1 NUoS cube data is available and represents information reported to management, all information provided for DUoS revenue consists of Actual Information (no Estimated Information required).</i></p>	<p>The immaterial variance between DUoS revenue in TM1 and DUoS revenue as reported in the Annual RIN was added to 'Revenue from Energy Delivery charges where time of use is not a determinant' (DREV0102) in table 3.1.1 and 'Revenue from residential Customers' (DREV0201) in table 3.1.2 to ensure total DUoS revenue reconciled to the Annual RIN.</p>
3.1.1 & 3.1.2 Non-DUoS Revenue	<ol style="list-style-type: none"> 1. For the purposes of table 3.1.1, Revenue from Metering Services, Public Lighting Maintenance and Ancillary Network Services (ANS) were identified from the Annual RIN and reported in DREV0110, DREV0112 and DREV0113 respectively under Alternative Control Services revenue. 	<p>None.</p>

3.1 Revenue

2. For the purposes of table 3.1.2, 'Revenue from other customers' (DREV0206) represents the sum of all non-DUoS revenue (DREV0110 to DREV0113) from table 3.1.1.

Note: Given the non-DUoS revenue data represents previously reported figures, all information provided for non-DUoS revenue consists of Actual Information (no Estimated Information required).

Use of estimated information

While Endeavour Energy made an assumption in order to ensure total DUoS revenue reported in table 3.1.1 and 3.1.2 reconciled to DUoS revenue reported in the Annual RIN (as outlined above), it has not used Estimated Information as defined in chapter 9 of the Economic Benchmarking RIN Instructions & Definitions.

Material accounting policy changes

Endeavour Energy have not undertaken any material changes in accounting policies which would impact the data contained in tables 3.1.1 and 3.1.2.

Reliability of information

All the information provided represents Actual Information extracted from Endeavour Energy's reporting systems and has been reconciled to figures reported in the Annual RIN. As a result, the information contained in tables 3.1.1 and 3.1.2 is considered to be reliable.

3.1.3 Revenue (penalties) allowed (deduced) through incentive schemes

Compliance with requirements of the notice

The entries in table 3.1.3 capture the annual revenue adjustments that have resulted from a performance-based incentive scheme.

The values reflect the year in which the reward or penalty is applied to revenue, not the year in which they are earned.

Non-performance based allowances such as the Demand Management Innovation Allowance Scheme; equity raising costs and debt raising cost allowances are not included in this table.

Source of information

EBSS

EBSS revenue adjustments have been sourced from the AER's Final Decision PTRM for Endeavour Energy for the determination period 2019-20 to 2023-24, adjusted for inflation.

EBSS revenue adjustments apply to standard control services revenue only. There are no EBSS revenue adjustments for alternate control services.

3.1 Revenue

STPIS

STPIS revenue adjustments have been sourced from the Annual Pricing Proposal.

STPIS revenue adjustments apply to standard control services revenue only. There are no STPIS revenue adjustments for alternate control services.

F-factor

Not applicable to Endeavour Energy.

S-factor true-up

The AER has incorporated FY18 and FY19 STPIS revenues into the calculation of Endeavour Energy's final decision remittal amount. The AER's final remittal decision includes an S-Factor True-Up amount of \$12.5m (\$FY19). This amount was used as an input to the AER's final 2019 revenue determination and applied in the FY20 year only. Adjusted for inflation, the S-Factor True-Up amount is \$12.7m (\$FY20).

S-factor true-up revenue adjustments apply to standard control services revenue only. There are no S-factor true-up revenue adjustments for alternate control services.

Other

The Other category has been used to report revenue adjustments for the Capital Expenditure Sharing Scheme (CESS).

CESS revenue adjustments have been sourced from the AER's Final Decision PTRM for Endeavour Energy for the determination period 2019-20 to 2023-24, adjusted for inflation.

CESS revenue adjustments apply to standard control services revenue only. There are no CESS revenue adjustments for alternate control services.

Methodology and assumptions

EBSS and CESS data is sourced from the AER's Final Decision PTRM for Endeavour Energy. The AER's final decision figure has been escalated from \$FY19 to \$FY20 using actual CPI.

S-factor true-up data is sourced from the AER's Final Decision Remittal Calculation for Endeavour Energy. The AER's final decision figure has been escalated from \$FY19 to \$FY20 using actual CPI.

STPIS data is sourced from the AER approved annual pricing proposal. S-factor % is converted to S-factor revenue increment by multiplying S-factor % (as calculated annually by the AER) by Annual Revenue allowance, adjusted for actual CPI and X-factor.

Use of estimated information

Not applicable.

Material accounting policy changes

Not applicable.

3.2 Operational Expenditure

- Data presented in the RIN Provisions covers the regulatory period with respect to financial information on provisions relating to Standard Control Services, in accordance with the Cost Allocation Methodology.
- Financial information provided relates to individual provisions as follows:
 - A Employee Entitlements
 - B Self Insurance
 - C Defined Benefits Superannuation
 - D Other
 - E Distributions (only where applicable).
- Each individual provision has been specified by name and variable codes for the respective line items have been separately identified as required.

Source of information

The source information used to populate the RIN Provisions was extracted initially from the Endeavour Energy Group Financial Statements (for the period ended 30 June 2020), Note 12 Provisions which details opening balances, additional provisions, amounts used, amounts reversed and closing balance amounts for each of the provision types listed in the Note. The Movement in Provisions schedule which is the basis for Note 12 Provisions in the Financial Statements is used as a base to split the various provisions into Standard Control, Alternate Control and Unregulated.

Methodology and assumptions

The Provisions schedule details the opening balance, additional provisions, amounts used (paid), unused amounts reversed, impact of change in discount rates (if applicable) and closing balance for each provision. The opening balance is based on the previous year closing balance rolled forward. The closing balance and movements for each provision were derived by applying relevant allocation driver percentages, updated for regulatory financial year information, to the closing balance and movements consistent with the annual Group Financial Statements, adjusted for any errors or misstatements identified post completion of the annual financial statements (where applicable).

Use of the prior year closing balance to equate to the current year opening balance creates an opening balance adjustment, due to variations in allocation drivers between years.

Allocation driver percentages applied to the closing balance and movements are based on the relevant organisational unit structure utilising the relevant TM1 cube. A further dissection provides a split into Standard Control Services, Alternative Control Services and Unregulated Services based on application of relevant allocation drivers for the year. Employee Entitlements (A) generally utilise an employee entitlements allocation driver; Self-Insurance (Workers Compensation) (B) and Defined Benefits Superannuation (C) utilise labour allocation drivers sourced from Labour expense in the TM1 Totex cube; Other (D) utilises labour allocation drivers where relevant as well as direct allocation (where more appropriate); Distributions (where applicable) (E) utilise Profit After Tax percentage outcomes consistent with the AER Annual Reporting RIN Income Statement split of Standard Control Services, Alternative Control Services and Unregulated Services where these services are reporting a profit.

Additional provisions, amounts used (paid) and unused amounts reversed for Employee Entitlements, Self Insurance, Defined Benefits Superannuation and Other have been split into Opex and Capex components, based on an allocation method utilising Endeavour Energy's internal Overhead Capitalisation model. The

3.2 Operational Expenditure

	Standard Control Services	Alternative Control Services	Retail/Unregulated	Total
Employee Entitlements				
Refer Balance Sheet tab "Employee	73.50%	22.81%	3.70%	100%
Opening Balance	137,155,211.20	49,034,874.72	7,065,539.08	193,255,625.01
Liabilities paid from provision	(42,770,015.20)	(13,272,059.04)	(2,150,294.87)	(58,192,369.11)
Increase/decrease in provision	50,975,649.13	9,344,433.17	2,392,882.26	62,712,964.57
Reversed	(20,811,633.60)	(6,458,104.55)	(1,046,320.63)	(28,316,058.78)
Closing Balance	124,549,211.54	38,649,144.30	6,261,805.85	169,460,161.69
	-	-	-	-
	-	-	-	-
Self Insurance (wC)				
LABOUR Allocation Driver	63.93%	26.09%	9.99%	100%
Opening Balance	16,177,296.41	4,959,825.89	648,877.96	21,786,000.26
Liabilities paid from provision	(1,385,855.63)	(565,504.80)	(216,470.49)	(2,167,830.93)
Increase/decrease in provision	11,137,204.26	6,185,982.45	3,617,643.96	20,940,830.67
Reversed	-	-	-	-
Closing Balance	25,928,645.03	10,580,303.80	4,050,051.53	40,559,000.00
	-	-	-	-
Defined Benefits Superannuation				
LABOUR Allocation Driver	63.93%	26.09%	9.99%	100.00%
Opening Balance	17,723,551.44	5,433,894.71	710,898.85	23,868,345.00
Liabilities paid from provision	-	-	-	-
Increase/decrease in provision	2,473,609.40	2,807,650.20	2,443,895.40	7,725,155.00
Reversed	-	-	-	-
Closing Balance	20,197,160.85	8,241,544.91	3,154,794.25	31,593,500.00
	-	-	-	-
Other - labour related (bonus)				
LABOUR Allocation Driver	63.93%	26.09%	9.99%	100.00%
Opening Balance	9,992,437.22	3,063,598.85	400,800.71	13,456,836.78
Liabilities paid from provision	(4,182,250.23)	(1,706,586.55)	(653,267.01)	(6,542,103.80)
Increase/decrease in provision	1,748,090.86	1,727,177.94	1,433,068.45	4,908,337.25
Reversed	-	-	-	-
Closing Balance	7,558,277.85	3,084,190.24	1,180,602.15	11,823,070.23
	-	-	-	-
Other - Site Remediation & Bush Fi	98.50%	1.50%	0.00%	100.00%
Opening Balance	567,000.00	-	-	567,000.00
Liabilities paid from provision	(319,331.92)	(4,862.92)	-	(324,194.84)
Increase/decrease in provision	6,253,956.92	95,237.92	-	6,349,194.84
Reversed	-	-	-	-
Closing Balance	6,501,625.00	90,375.00	-	6,592,000.00
	-	-	-	-
TOTAL				
Opening Balance	181,615,496.27	62,492,194.17	8,826,116.60	252,933,807.05
Liabilities paid from provision	(48,657,452.98)	(15,549,013.32)	(3,020,032.38)	(67,226,498.68)
Increase/decrease in provision	72,588,510.58	20,160,481.68	9,887,490.07	102,636,482.33
Reversed	(20,811,633.60)	(6,458,104.55)	(1,046,320.63)	(28,316,058.78)
Closing Balance	184,734,920.27	60,645,558.24	14,647,253.77	260,027,731.92
	-	-	-	-
CHECK	0.00			

Based on the file above, this is linked into RIN Provisions template as shown below (extract only). Refer Movement Schedule tab.

3.2 Operational Expenditure

Network Headcount %	Capitalisation Rate %	Capex %
71.15%	68.31%	48.60%

The discount rate for Defined Benefits Superannuation is the changes in financial assumptions in the actuarial report.

The capitalisation overhead rate is determined starting with data from the Capitalised Overhead model.

Material accounting policy changes

Endeavour Energy has not undertaken any material changes in accounting policies which would impact the data contained in regulatory reporting statement 3.2.3 apart from the basis of valuation of maturing allowance and long service leave. These provisions are based on its present value (also equal to its nominal value) plus on costs (previously based on an actuarial assessment). Majority of these benefits are current in nature and therefore there is no unconditional right to defer settlement of the obligation. Accordingly, the present value of these benefits is equal to its nominal value.

Reliability of information

In light of the sources of information used to complete this reporting statement, it is considered reliable for the purposes of confirming the provisions and changes in the provisions over time in accordance with the prevailing obligations and regulatory tools.

Use of estimated information

Standard Control Services, Alternative Control Services and Unregulated Services for the period for allocation of Distribution provision movements (only where applicable). The profit and loss split are required to allocate the Dividend provision consistent with profit after tax percentage outcomes (only where applicable).

3.2.4 Operational Expenditure for High Voltage Customers

Compliance with requirements of the notice

Estimates have been made for the OPEX that Endeavour Energy would have incurred had it owned the distribution transformers which are owned by HVC's. The OPEX estimates consist of substation inspections, network switching and fault & emergencies.

Source of information

Data that was used to produce the estimates includes:

- Ellipse asset database (Extracted using Cognos in July 2020); and
- Finance OPEX Spreadsheet (June 2020).

Methodology and assumptions

To estimate the substation inspection OPEX requirements:



3.3 Assets

3.3 Assets

3.3.1 Regulatory Asset Base Values

Compliance with requirements of the notice

Endeavour Energy has two Alternative Control Services that include a RAB as part of the current pricing arrangements, that being type 5 and 6 meter service provision and public lighting assets in service prior to July 2009. This is a change to prior years due to changes in service classification as part of the AER's April 2015 determination.

There is also a residual recovery amount for pre-2009 Public Lighting assets; however, this value is not maintained in a RAB as defined in normal use.

Source of information

Table 3.3.1 is sourced from:

- The 2018-19 economic benchmarking RIN for the opening RAB for both standard and alternative control services;
- The PTRM attached to the AER's 2019-24 final determination published April 2019 for SCS regulatory inflation, nominal vanilla WACC (with updated debt) and straight-line depreciation;
- the metering pricing model and public lighting pricing model included with the AER final decision published in April 2019 for the ACS straight line depreciation; and
- Annual RIN preparatory files for actual network funded capex and proceeds from disposals for SCS and ACS.

Methodology and assumptions

This table was completed using reference data contained in the Metering Model and Public Lighting Model attachments to the AER's final decision for the 2019 to 2024 periods, and the PTRM attached to the AER's 2019-24 final determination.

The instructions and description of this table seek to replicate the annual RAB roll forward processes, in particular noting the capex amount as recognised in the RFM.

Consequently, this table and all subsequent RAB tables have adopted the treatment convention relating to metering assets as encapsulated in the AER's RFM.

Endeavour Energy has ensured that the mapping of the fixed asset register financial data was reconciled to the RFM values used by the AER in the 2014-19 and 2019-24 distribution determinations.

Leasehold improvements have been classified as other assets with long lives noting that the closest proxy for these investments is non-system buildings for which such leases and consequential improvements would most likely relate.

The CPI applied in the RFM and PTRM is that which applies for annual pricing purposes aligned to the timing conventions used in the RFM.

3.3 Assets

Use of estimated information

No variables were assumed in the completion of this table for standard control services. All information was drawn from AER decisions, published CPI data, or statutory information that is used as the basis for completing the annual RIN.

Material accounting policy changes

Endeavour Energy has not undertaken any material changes in accounting policies which would impact the data contained in table 3.3.1.

Reliability of information

In light of the sources of information used to complete this table it is considered reliable for the purposes of confirming the RAB and changes in the RAB over time in accordance with the prevailing obligations and regulatory tools.

3.3.2 Asset Value Roll Forward

Compliance with requirements of the notice

Endeavour Energy has applied the standard approach as set out in section 4.1.1 of the RIN Instructions and definitions. Endeavour Energy developed a map of the fixed asset register assets to the RIN RAB categories as set out in Chapter 9, Definitions.

The mapping of the financial information allowed for a direct allocation of each fixed asset register asset class to a single RIN RAB asset category allowing Endeavour to adopt this approach. The mapping is consistent with that of prior years.

Source of information

Information has been sourced from:

- Endeavour Energy's fixed asset register;
- The PTRM and RFM included with the AER final decision published in April 2019;
- The metering pricing model and public lighting pricing model included with the AER final decision published in April 2019;
- The 2018-19 economic benchmarking RIN for the opening RAB for alternative control services;
- Endeavour Energy Statutory P&L allocated in accordance with the CAM; and
- Work papers for the 2019/20 Annual RIN.

Methodology and assumptions

Endeavour Energy sources the opening value for each category from the closing value from the previous year's reporting. In the first year of the regulatory control period (FY20), the opening value is adjusted for differences in forecast and actual net capex for year t-1 (FY19) using the RFM methodology. The inflation on this value is then linked to the overall inflation on the RAB taken from table 3.3.1 above.

The straight-line depreciation for each Benchmarking RIN asset class is calculated by apportioning the regulatory straight-line depreciation obtained from table 3.3.1 weighted by the opening value of each Benchmarking RIN asset class.

3.3 Assets

Actual additions and proceeds from disposals are drawn directly from fixed asset register data that has been mapped to the Benchmarking RIN asset classes and allocated where appropriate between service classifications.

This process is set out below.

Opening value = Closing value from the 2018-19 benchmarking RIN for each asset category (adjusted for differences in forecast and actual net capex for year t-1 (FY19) using the RFM methodology).

Inflation addition = $(\text{Opening value} / \text{Total RAB opening value}) \times \text{Total RAB inflation addition}$

Straight line depreciation = $(\text{Opening value} / \text{Total RAB opening value}) \times \text{Total RAB straight line depreciation}$

Actual Additions = Sum of fixed asset register capex for asset classes relevant to RAB asset class * nominal vanilla WACC $^0.5$

Disposals = Sum of fixed asset register disposals for asset classes relevant to RAB asset class * nominal vanilla WACC $^0.5$

Closing Value = Opening value - Regulatory depreciation + Actual Additions – Disposals

Use of estimated information

Endeavour Energy has not used any estimated information to calculate the values in the standard control services elements of table 3.3.2, all sources of information are actual financial or actual determination amounts.

Material accounting policy changes

Endeavour Energy has not undertaken any material changes in accounting policies which would impact on the data in table 3.3.2.

Reliability of information

Endeavour submits that the information is reliable as all amounts ultimately aggregate to either RAB values contained in the relevant Roll Forward or Pricing Models or audited statutory amounts.

3.3.3 Total Disaggregated RAB Asset Values

Compliance with requirements of the notice

As set out in section 4.1.2 of the RIN Instructions and Definitions Endeavour Energy is required to calculate the values in this table as being the average of the opening and closing RAB asset class values from Table 4.2 above. The values in this table have been linked to the opening and closing RAB roll forward amounts as calculated in table 3.3.2.

Source of information

The information for table 3.3.3 was sourced from table 3.3.2.

3.3 Assets

The exception being capital contributions received that are sourced directly from the statutory financial values applying the same asset class mapping and service classifications as per table 3.2.1.

Methodology and assumptions

The calculation for each item in table 3.3.3 is as per below:

(Opening Value for RAB class 1 + Closing Value for RAB class 1) / 2

Capital contributions received are those amounts allocated to standard and alternative control service classifications as sourced from Endeavour's statutory accounting information.

Use of estimated information

Endeavour Energy has not used estimated information specifically for table 3.3.3. All information sourced from table 3.3.2 is dependent upon actual financial information and application of the RAB Framework. The only exception being capital contributions that is sourced from the audited statutory accounts.

Material accounting policy changes

Endeavour Energy has not undertaken any material changes in accounting policies which would impact the data in table 3.3.3.

Reliability of information

Table 3.3.3 is directly linked to table 3.3.2 and hence the reliability of the information in table 3.3.3 is directly equivalent to that as per table 3.3.2 above. The only exception being capital contributions that have been audited as part of the statutory account preparation.

3.3.4 Asset Lives

Compliance with requirements of the notice

As set out in section 4.1.2 of the RIN Instructions and Definitions Endeavour Energy is required to apply a weighted average life calculation to determine the standard and remaining lives. These lives will represent the proportional contribution of the fixed asset register asset classes, their actual standard and remaining lives and actual financial values.

Source of information

The data for table 3.3.4 was sourced from actual fixed asset register information for each year of reporting.

Methodology and assumptions

To determine the **standard** life for each asset class required by the RIN, Endeavour calculated the Weighted Average Standard life using the underlying fixed asset register asset class information. This methodology is unchanged from prior years.

Algebraically this approach can be described as

$$\text{Service life of new assets} = \frac{\sum_{j=1}^n \text{OCC}_j \times \text{Life}_j}{\sum_{j=1}^n \text{OCC}_j}$$

To determine the **remaining** life for each asset class required by the RIN, Endeavour calculated the Weighted Average remaining life using the underlying fixed asset register asset class information.

3.3 Assets

Algebraically this approach can be described as

$$\text{Residual life of assets} = \frac{(\sum_{j=1}^n \text{WDV}_j)}{\sum_{j=1}^n \text{OCC}_j} \times \text{Life}_j$$

Where:

n is the number of individual assets in an AER asset class

OCC_j is the Opening Capital Cost of individual asset j

WDV_j is the Written Down Value of individual asset j

Life_j is the standard life of individual asset j

Dep_j is the Depreciation of individual asset j

It is noted that consistent with our pre-existing accounting policies a periodic revaluation exercise was undertaken in 2010/11 for statutory reporting purposes. The combined impact of both restatement of the original capital cost in line with a replacement cost methodology as well as a cash flow value in use impairment on the residual value was providing step changes in the calculated remaining asset lives, in the order of a 20-year reduction in expected life in some instances. To remedy the impact of these revaluation transactions, the impact on the asset register since that time was removed from the underlying data using the journals and work papers that supported the original adjustments. The resultant outcomes are presented without the impact of the periodic revaluation.

It has been assumed that the composition of network services metering assets and standard control services assets are equal and therefore have the same standard and remaining life expectations.

Use of estimated information

No estimated data was used in the calculation of the asset lives. All information used was drawn from actual fixed asset register information.

Material accounting policy changes

Endeavour Energy has not undertaken any material changes in accounting policies which would impact the data contained in table 3.3.4.

Reliability of information

The data used in the calculations is all sourced from annual audited accounting information and is therefore considered reliable.



• 3.4 Operational Data

3.4 Operational Data

3.4.1 Energy Delivery

Compliance with requirements of the notice

The data presented in the tables contained in section 3.4.1 is consistent with the requirements of the Economic Benchmarking RIN. In particular:

- The data presented in tables 3.4.1, 3.4.1.1 and 3.4.1.4 represents the total electricity transported out of Endeavour Energy's network (measured in GWh). This is reflective of the energy metered at the customers charging location (i.e. connection point) and reconciles to total energy consumption reported in management reports. The figures in these tables represent energy consumption reported for the financial year and therefore include year-end accruals;
- The data presented in table 3.4.1.1 reflects energy delivered in accordance with the category breakdowns as per the definitions provided in chapter 9 of the Economic Benchmarking RIN Instructions and Definitions. In particular, the peak, shoulder and off-peak periods relate to Endeavour Energy's own charging periods. Energy delivery where time of use is not a determinant is reflective of energy which is measured by an accumulation meter and charged on an accumulation basis;
- The data presented in table 3.4.1.2 reflects energy input into Endeavour Energy's network as measured at supply points from TransGrid and other DNSPs in accordance with the definitions provided in chapter 9 of the Economic Benchmarking RIN Instructions and Definitions. All energy input into Endeavour Energy's network from TransGrid or other DNSPs is measured as being received in either peak, shoulder or off-peak times and therefore there is nil energy received from TNSP and other DNSPs not included in the above categories;
- The data presented in table 3.4.1.3 reflects energy input in Endeavour Energy's network by embedded generators, including residential embedded generators. The data is reported in accordance with the definitions provided in chapter 9 of the Economic Benchmarking RIN Instructions and Definitions. It is noted that energy received from residential embedded generators is measured on an accumulation basis and not measured by the time of receipt and therefore energy input from this source is allocated to the 'energy received from embedded generation not included in above categories from residential embedded generation' (DOPED0408) category; and
- The data presented in table 3.4.1.4 reflects energy delivered in accordance with the category breakdowns as per the definitions provided in chapter 9 of the Economic Benchmarking RIN Instructions and Definitions. This category breakdown is also consistent with the customer types reported in table 3.4.2.1.

Source of information

The information used to populate the tables contained in section 3.4.1 was extracted directly from TM1. Endeavour Energy uses this OLAP tool for various purposes including budgeting and forecasting, monthly reporting and regulatory account allocations and it has been used historically to provide data for previous audited Regulatory Accounts / RINs. It is a cube-based technology which allows rules to be created between cubes and within cubes.

3.4 Operational Data

Set out in the table below are the specific cubes used to obtain the required information for the tables in section 3.4.1, along with a description in relation to the use of the cube by Endeavour Energy:

Table	TM1 Cube	Description
3.4.1, 3.4.1.1 & 3.4.1.4	NUoS cube	The NUoS cube is used by Endeavour Energy to store and report billed, accrued and import data related to energy volumes, customer numbers and demand KW/kVA and calculate associated revenue outcomes (i.e. energy revenue, NAC revenue and demand revenue) at the network tariff level. It is the primary tool used to calculate the month end revenue accrual and report on month end revenue results and is also used extensively for budgeting and forecasting revenue related items.
3.4.1.2 & 3.4.1.3	TUoS Reconciliation cube	The TUoS Reconciliation cube is primarily used by Endeavour Energy to reconcile TransGrid's monthly TUoS invoice with internal system import data for the month. In performing this task, the TUoS Reconciliation cube contains information regarding system imports and peak demand by Bulk Supply Point ('BSP') and for each embedded generator (including residential solar system imports). The TUoS Reconciliation cube is also used to calculate and report on total system imports for the month which is used in the monthly NUoS accrual process.

Methodology and assumptions

The following table sets out the methodology applied to calculate the required data for each of the tables in section 3.4.1.

Table	Methodology	Assumptions
3.4.1, 3.4.1.1 & 3.4.1.4	<ol style="list-style-type: none"> 1. Extract energy consumption data from the TM1 NUoS cube at the network tariff level for the financial year and by time period of consumption (i.e. Peak, Shoulder, Off-peak and Non TOU). 2. Reconcile the total derived at the individual network tariff level to the total from the TM1 NUoS cube to ensure no network tariffs have been excluded. 3. Populate tables 3.4.1, 3.4.1.1 and 3.4.1.4 from the detailed TM1 NUoS cube data in accordance with the Benchmarking RIN Instructions & Definitions. 	None.

3.4 Operational Data

	<p><i>Note: given TM1 NUoS cube data is available and represents previously reported figures, all information provided for these tables consists of Actual Information (no Estimated Information required).</i></p>	
<p>3.4.1.2</p>	<ol style="list-style-type: none"> 1. Extract TransGrid system import data from the TM1 TUoS Reconciliation cube at the BSP level for the financial year and by time period of delivery to the network by TransGrid (i.e. Peak, Shoulder and Off-peak). 2. Reconcile the total derived at the BSP level to the total from the TM1 TUoS Reconciliation cube to ensure no BSPs have been excluded. 3. TransGrid system import data from the TM1 TUoS Reconciliation cube is used to populate table 3.4.1.2 in accordance with the Benchmarking RIN Instructions & Definitions. <p><i>Note: given TM1 TUoS Reconciliation cube data for TransGrid system imports is available and represents previously reported figures, all information provided for this table consists of Actual Information (no Estimated Information required).</i></p>	<p>None.</p>
<p>3.4.1.3</p>	<ol style="list-style-type: none"> 1. Extract embedded generation system import data from the TM1 TUoS Reconciliation cube at the embedded generator level for the financial year and by time period of delivery to the network (i.e. Peak, Shoulder and Off-peak). 2. Reconcile the total derived at the embedded generator level to the total from the TM1 TUoS Reconciliation cube to ensure no embedded generators have been excluded. 3. Embedded generator system import data from the TM1 TUoS Reconciliation cube is used to populate the table in accordance with the Benchmarking RIN Instructions & Definitions. <p><i>Note: given TM1 TUoS Reconciliation cube data for Embedded Generation system imports is available and represents previously reported figures, all information provided for this table consists of Actual Information (no Estimated Information required).</i></p>	<p>None.</p>

3.4 Operational Data

Use of estimated information

Endeavour Energy has not used Estimated Information, as defined in chapter 9 of the Economic Benchmarking RIN Instructions & Definitions, in completing the tables in section 3.4.1.

Material accounting policy changes

Endeavour Energy have not undertaken any material changes in accounting policies which would impact the data contained in the tables in section 3.4.1.

Reliability of information

All the information provided for the financial year represents Actual Information extracted from Endeavour Energy's reporting systems and reconciles to information reported to management. As a result, the information contained in the tables in section 3.4.1 is considered to be reliable.

3.4.2 Customer Numbers

Compliance with requirements of the notice

The data presented in the tables contained in section 3.4.2 is consistent with the requirements of the Economic Benchmarking RIN. In particular:

- The data presented in tables 3.4.2.1 and 3.4.2.2 represents the average number of NMIs in Endeavour Energy's network for the financial year (except for unmetered customers, which is the number of connection points), calculated as the average of the number of NMIs on the first day of the regulatory year and on the last day of the regulatory year. Both energised and de-energised NMIs are included and extinct NMIs are not included. In addition, customer numbers have been reported in accordance with the categorisation as per the definitions provided in chapter 9 of the Benchmarking RIN Instructions & Definitions;
- Unmetered customer numbers presented in table 3.4.2.1 represents the sum of connections (excluding public lighting connections) in Endeavour Energy's network that do not have a NMI and the energy usage for billing purposes is calculated using an assumed load profile. For Endeavour Energy, this predominantly includes unmetered connections related to bus shelters, telephone boxes etc. These figures specifically exclude unmetered connections related to traffic signals on the basis that the customer for the connections has a market NMI and therefore does not meet the definition of an unmetered customer. In addition, public lighting connections are not included in the unmetered customer category but rather included in the 'Non-residential customers not on demand tariff customer numbers' (DOPCN0102) category; and
- In order to account for the fact that unmetered connections related to traffic signals have been specifically excluded from the definition of unmetered customers, table 3.4.2.4 provides the number of unmetered connections reported, and the number of unmetered connections not reported (i.e. unmetered connections related to traffic signals), in unmetered customers in table 3.4.2.1.

Source of information

Table 3.4.2.1 - Customer numbers excluding unmetered customers & de-energised customers

The information used to populate table 3.4.2.1 (excluding unmetered customers and de-energised customers) was extracted directly from TM1. Endeavour Energy uses this OLAP tool for various purposes including budgeting and forecasting, monthly reporting and regulatory account allocations and it has been

3.4 Operational Data

used historically to provide data for previous audited Regulatory Accounts / RINs. It is a cube-based technology which allows rules to be created between cubes and within cubes.

The information was extracted from the TM1 NUoS cube which is used by Endeavour Energy to store and report billed, accrued and import data related to energy volumes, customer numbers and demand KW/kVA and calculate associated revenue outcomes (i.e. energy revenue, NAC revenue and demand revenue) at the network tariff level. It is the primary tool used to calculate the month end NUoS accrual and report on month end NUoS results and is also used extensively for budgeting and forecasting NUoS related items.

Table 3.4.2.1 - Unmetered customers

The information used to calculate unmetered customer numbers by connection point was extracted from a monthly report provided to the default retailer in Endeavour Energy's network area. This report is generated from Endeavour Energy's billing system (Banner) and includes details of all unmetered connection points in Endeavour Energy's network area and also the date which each supply was connected.

Table 3.4.2.1 – De-energised customers

Customer numbers obtained from the TM1 NUoS cube originate from Endeavour Energy's billing system and therefore only relate to active or energised customers. The number of de-energised customers was obtained from C9 Customer Count reports run from MSATS as at 30 June. The C9 Customer Count report includes details of customer numbers by status (i.e. Active, De-energised and Greenfield).

Table 3.4.2.2

Endeavour Energy disclose customer numbers by location on the network in the Annual RIN 6.2.4 (Distribution Customer Numbers). This report was used, in conjunction with customer numbers reported in table 3.4.2.1, to calculate customer numbers by location on the network whilst ensuring the total customer numbers reconciles to table 3.4.2.1.

Methodology and Assumptions

The following table sets out the methodology applied to calculate the required data for each of the tables in section 3.4.2.

Table	Methodology	Assumptions
3.4.2.1	<ol style="list-style-type: none"> 1. Extract 30 June customer number data from the TM1 NUoS cube at the network tariff level. This data represents active or energised customers only and unmetered customer numbers represent the number of NMIs billed rather than the number of connection points. This information is used to calculate average customer numbers for the financial year (excluding unmetered customers and de-energised customers). 2. Reconcile the total derived at the individual network tariff level to the total from the TM1 NUoS cube to ensure no network tariffs were excluded. 	<p>A limitation with the unmetered connection point report utilised in step 3 is that it will only include details of unmetered connection points as at 1 March 2010 (date of Retail business sale) and any unmetered connection points added to the network from that date.</p>

3.4 Operational Data

	<p>information from the Electricity Network Performance Report. This was done to ensure customer numbers per table 3.4.2.2 reconciled to the customer numbers in table 3.4.2.1.</p> <p>3. The customer numbers calculated in step 2 were used to populate table 3.4.2.2 in accordance with the Benchmarking RIN Instructions & Definitions.</p> <p><i>Note: given the data used to populate table 3.4.2.2 is available and represents previously reported figures, all information provided for these tables consists of Actual Information (no Estimated Information required).</i></p>	
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Use of estimated information

Endeavour Energy has not used Estimated Information, as defined in chapter 9 of the Economic Benchmarking RIN Instructions & Definitions, in completing that table in section 3.4.2.

Material accounting policy changes

Endeavour Energy have not undertaken any material changes in accounting policies which would impact the data contained in the tables in section 3.4.2.

Reliability of information

All the information provided for the financial year represents Actual Information extracted from Endeavour Energy's reporting systems and reconciles to information reported to management. As a result, the information contained in the tables in section 3.4.2 is considered to be reliable.

3.4.3 System Demand

3.4.3.1 Annual system maximum demand characteristics at the zone substation level – MW measure

Compliance with requirements of the notice

The data presented in the tables contained in section 3.4.3.1 is consistent with the requirements of the Economic Benchmarking RIN.

Source of information

Historian Database, Summer Demand Forecast 2021-30.

Methodology and assumptions

Assumption – Upon determining the financial year for Endeavour Energy's maximum demand, the season (summer or winter) that the maximum demand falls in will become the assumed financial peak for all substations and high voltage customers.

3.4 Operational Data

E.g. FY19-20 Endeavour Energy's maximum demand fell in summer. It is assumed that all individual substations and high voltage customers' maximum demand will also be in summer for FY19-20.

DOPSD0101 – This was calculated by taking the summation of all individual zone substations and high voltage customers' maximum demand for the relevant financial year in MVA converted to MW by its respective power factor.

DOPSD0102 – This was calculated by taking the summation of all individual zone substations and high voltage customers' weather corrected values at the 10% PoE MW level.

DOPSD0103 – This was calculated by taking the summation of all individual zone substations and high voltage customers' weather corrected values at the 50% PoE MW level.

DOPSD0104 – This was calculated by the summation of all zone substations and high voltage customers (in MW) by date and time and taking the maximum of the summated values.

DOPSD0105 – Summation of all zone substations and high voltage customers by date and time and applying a weather correction to the summated values at the 10% PoE MW Level.

DOPSD0106 – Summation of all zone substations and high voltage customers by date and time and applying a weather correction to the summated values at the 50% PoE MW Level.

Use of estimated information

No estimated figures were used for this section.

Reliability of information

Information has been directly taken from the Historian database and forecasting documents.

3.4.3.2 Annual system maximum demand characteristics at the transmission connection point – MW measure

Compliance with requirements of the notice

The data presented in the tables contained in section 3.4.3.2 is consistent with the requirements of the Economic Benchmarking RIN.

Source of information

Historian Database, Summer Demand Forecast 2021-30.

Methodology and assumptions

Assumption - Upon determining the financial year for Endeavour Energy's maximum demand, the season (summer or winter) that the maximum demand falls in will become the assumed financial peak for all substations.

E.g. FY19-20 Endeavour Energy's maximum demand fell in summer. It is assumed that all individual substations demand will also be in summer for FY19-20.

3.4 Operational Data

DOPSD0107 – This was calculated by taking the summation of all individual transmission substations (Endeavour Energy Bulk Supply Points) maximum demand for the relevant financial year in MVA and converted to MW by its respective power factor.

DOPSD0108 – This was calculated by the summation of all transmission substation (Endeavour Energy Bulk Supply Points) weather corrected values at the 10% PoE MW level.

DOPSD0109 – This was calculated by the summation of all transmission substation (Endeavour Energy Bulk Supply Points) temperature corrected values at the 50% PoE MW level.

DOPSD0110 – This was calculated by the summation of all transmission substations (Endeavour Energy Bulk Supply Points) in MW by date and time and taking the maximum of the summated values.

DOPSD0111 – Summation of all transmission substations (Endeavour Energy Bulk Supply Points) by date and time and applying a weather correction to the summated values at the 10% PoE MW Level.

DOPSD0112 – Summation of all transmission substations (Endeavour Energy Bulk Supply Points) by date and time and applying a weather correction to the summated values at the 50% PoE MW Level.

Use of estimated information

No estimated figures were used for this section.

Reliability of information

Information has been directly taken from the Historian database and forecasting documents.

3.4.3.3 Annual system maximum demand characteristics at the zone substation level – MVA measure

Compliance with requirements of the notice

The data presented in the tables contained in section 3.4.3.3 is consistent with the requirements of the Economic Benchmarking RIN.

Source of information

Historian Database, Summer Demand Forecast 2021-30.

Methodology and assumptions

Assumption – The power factors of the Endeavour Energy network provide an adequate conversion between MVA and MW at the zone substation and high voltage customer level.

In this section, DOPSD0204, DOPSD0205 and DOPSD0206 were calculated using the power factor from *Table 3.4.3.5 Power factor conversion between MVA and MW - DOPSD0301*.

DOPSD0201 - This was calculated by taking the summation of all individual zone substations and high voltage customers' maximum demand.

DOPSD0202 - This was calculated by the summation of all individual zone substations and high voltage customer weather corrected values at the 10% PoE MVA level.

3.4 Operational Data

Adjustments were made to MVAR data by adding VARs associated with capacitor banks on the 11kV and 22kV busbar at zone substations in order to capture native MVAR load.

12.7kV SWER

The PF of our SWER lines were taken to be the PF at Kandos ZS, where most of our SWER lines are located.

Low Voltage

There is no metering or SCADA information for the vast majority of the low voltage network. The power factor of our LV distribution network was assumed to be the same as the 11kV network power factor, since 11kV is the main network distribution voltage for Endeavour Energy.

Use of estimated information

Low Voltage power factor was estimated in line with the methodology and assumptions above.

Material accounting policy changes

Endeavour Energy has not undertaken any material changes in accounting policies which would impact the data contained in the tables in this section.

Reliability of information

The assumptions that have been made were done as a best estimate due to the limited availability of data relating to the distribution and SWER lines.

The PF values included in this section are based on actual data and do not make use of estimates, making the information provided reliable.

3.4.3.6 & 3.4.3.7 Demand supplied (for customers charged)

Compliance with requirements of the notice

The data presented in tables 3.4.3.6 and 3.4.3.7 contained in section 3.4 is consistent with the requirements of the Economic Benchmarking RIN. In particular:

- The data presented in table 3.4.3.6 represents the total Maximum Demand amount supplied to customers as measured in MW. All Maximum Demand charges are based on measured Maximum Demand rather than contracted Maximum Demand; and
- The data presented in table 3.4.3.7 represents the total Maximum Demand amount supplied to customers as measured in MVA. All Maximum Demand charges are based on measured Maximum Demand rather than contracted Maximum Demand.

Source of information

The information used to populate tables 3.4.3.6 and 3.4.3.7 was extracted directly from TM1. Endeavour Energy uses this OLAP tool for various purposes including budgeting and forecasting, monthly reporting and regulatory account allocations and it has been used historically to provide data for previous audited Regulatory Accounts / RINs. It is a cube-based technology which allows rules to be created between cubes and within cubes.

3.4 Operational Data

The information was extracted from the TM1 NUoS cube which is used by Endeavour Energy to store and report billed, accrued and import data related to energy volumes, customer numbers and demand KW/kVA and calculate associated revenue outcomes (i.e. energy revenue, NAC revenue and demand revenue) at the network tariff level. It is the primary tool used to calculate the month end NUoS accrual and report on month end NUoS results and is also used extensively for budgeting and forecasting NUoS related items.

Methodology and assumptions

The following table sets out the methodology applied to calculate the required data for tables 3.4.3.6 and 3.4.3.7.

Table	Methodology	Assumptions
3.4.3.6	<ol style="list-style-type: none"> 1. Maximum Demand data was extracted from the TM1 NUoS cube at the network tariff level for the financial year. 2. The total derived at the individual network tariff level was reconciled to the total from the TM1 NUoS cube to ensure no network tariffs were excluded from the extraction process. 3. The detailed TM1 NUoS cube data was used to populate table 3.4.3.6 in accordance with the Benchmarking RIN Instructions & Definitions. Only those customers in Endeavour Energy's 'Bulk & Inter-Distributor Transfer' category are charged Maximum Demand on a measured MW basis. <p><i>Note: given TM1 NUoS cube data is available and represents previously reported figures, all information provided for these tables consists of Actual Information (no Estimated Information required).</i></p>	None.
3.4.3.7	<ol style="list-style-type: none"> 1. Maximum Demand data was extracted from the TM1 NUoS cube at the network tariff level for the financial year. 2. The total derived at the individual network tariff level was reconciled to the total from the TM1 NUoS cube to ensure no network tariffs were excluded from the extraction process. 3. The detailed TM1 NUoS cube data was used to populate table 3.4.3.7 in accordance with the Benchmarking RIN Instructions & Definitions. All customers, except those customers in Endeavour Energy's 'Bulk & Inter-Distributor Transfer' category, are charged Maximum Demand on a measured MVA basis. <p><i>Note: given TM1 NUoS cube data is available and represents previously reported figures, all information provided for these tables consists of Actual Information (no Estimated Information required).</i></p>	None.

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- **3.5 Physical**
- **Assets Expenditure**

3.5.1 Network Capacities

Compliance with requirements of the notice

Endeavour Energy has reported network circuit length and circuit capacity MVA capacities for low voltage to 132kV voltages in line with AER RIN Instructions and Definitions document for Final RIN for Economic Benchmarking.

3.5.1.1 Overhead network length of circuit at each voltage and 3.5.1.2 Underground network circuit length at each voltage

DPA0101 to DPA0206 Circuit Lengths

Source of information

Circuit length actual data (DPA0101 to DPA0107 and DPA0201 to DPA0206) was determined from GIS production data based on operating voltage.

Methodology and assumptions

The information used to provide circuit lengths is derived from systems that are used in the normal course of business and thus are considered actual information. Production systems are constantly updated and can produce dynamic results due to being constantly updated to reflect the network. Changes over short periods of time are considered negligible to RIN reported.

All GIS conductor codes have two voltage fields (operating and constructed), due to historical decisions Endeavour Energy's overhead 11kV network is flagged as constructed at 22kV. For the purposes of the RIN reporting the operating voltage has been used from FY20 forward as this is reflective of the actual capacity and capability of the assets (e.g. the 11kV network is only connected to an 11kV substation and almost all hardware (surge arresters and transformers) on the line are rated at 11kV).

3.5.1.3 Estimated overhead network weighted average MVA capacity by voltage class and 3.5.1.4 Estimated underground network weighted average MVA capacity by voltage class

Compliance with requirements of the notice

The data presented in these tables is consistent with the requirements of the Economic Benchmarking RIN.

Source of information

The sources of information are other tables in the RIN as listed below:

- Conductor Code master (including revised ratings in line with Endeavour's MDI standards on ratings)

-
-
-
-
- **3.5 Physical**
- **Assets Expenditure**

Reliability of information

As noted above, Endeavour Energy has used available reported information for this section.

3.5.3 Public Lighting

The number of luminaires, wood poles (dedicated) and columns (dedicated) is taken as of 30 June 2020 from the Street Lighting Usage of System (SLUoS) report for the financial year 2019-20 (1 July 2019 to 30 June 2020).

Compliance with requirements of the notice

The data provided is in line with the format provided.

Source of information

The information is extracted from the financial year end report of SLUoS for the month of June 2020. This report relies on the information on Ellipse data base of Endeavour Energy.

Methodology and assumptions

SLUoS reports are prepared by Network Revenue Analyst, Commercial Finance, Endeavour Energy, every month. The report for the month ending June 2020 was used to extract the data for 30 June 2020.

Reliability of information

Ellipse database is considered reliable and is Endeavour Energy's main source of asset / financial data. Historical data is frequently applied for budgeting and forecasting.



• 3.6 Quality of Service Data

3.6 Quality of Service Data

Average kWh per minute per customer was then multiplied by the number of customers interrupted and the duration of the interruption to determine kWh energy not supplied (expressed as GWh in the RIN).

Consumption data per customer is based on Domestic Controlled Load, Domestic General Rate, Commercial General Supply non TOU and Commercial General Supply TOU

Excluding Unmetered (a summated figure) and Industrial load based on the assumption that the majority of industrial load has either a backup supply or is on dedicated feeders that have high reliability. Including this load would over state load lost to other customers.

The method that Endeavour Energy has adopted is a variant of the AER's option 1, using averaged customer consumption data.

Use of estimated information

Endeavour Energy has used estimated information for table 3.6.2 - refer above estimate was required because we were unable to apply current or historical data to get actual information in accordance with the AER prescribed options.

Limitations included:

- lack of complete data for all reporting periods;
- Available data in large volumes and separated across different information systems; AND
- merging data sets unmanageable and requires a large degree of assumptions to be made.

Material accounting policy changes

Endeavour Energy has not undertaken any material changes in accounting policies which would impact the data contained in the tables in this section.

Reliability of information

All information provided represents estimated information as the data for table 3.6.2 is not readily available or captured. This information should not be relied upon as an accurate estimation of the actual energy not supplied to customers when they are interrupted.

3.6.3 System Losses

Compliance with requirements of the notice

The data presented in table 3.6.3 contained in section 3.6 is consistent with the requirements of the Economic Benchmarking RIN. In particular:

- The data presented in table 3.6.3 represents system losses as the proportion of energy that is lost in distribution of electricity from the transmission network to Endeavour Energy customers; and
- System losses have been calculated as per the below equation as stipulated in the Economic Benchmarking RIN Instructions & Definitions:

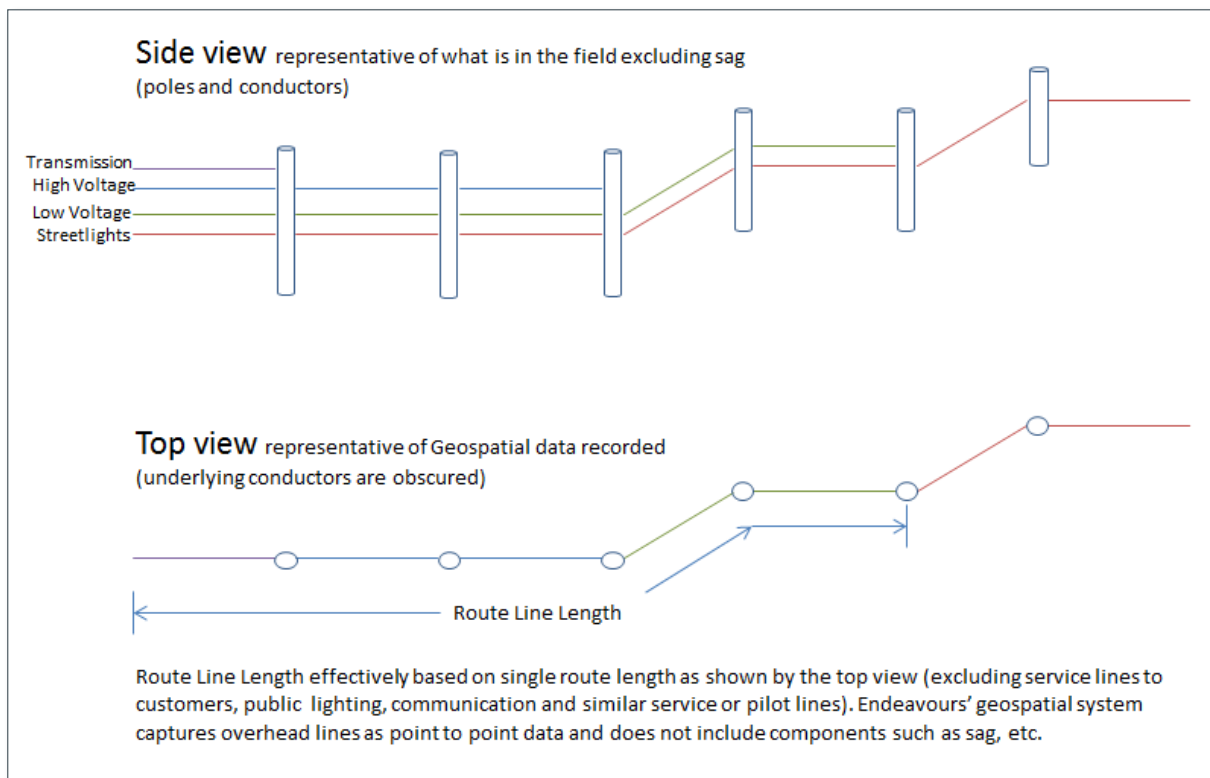
3.7 Operating Environment Factors

Overhead route line length uses the same methodology and complex geospatial queries as in previous reporting periods.

Actual geospatial data was used as the basis for Underground route line length. Underground geospatial data is captured differently to how Overhead geospatial data is captured. Additionally, not all Underground Duct geospatial data is available on Endeavour Energy's GIS system, therefore a mix of Duct data where available and Underground Conductor data was used. Determining the Underground route is complicated by the capture process which does not place conductors on top of each other where in the same route (Overhead conductors are placed on top of each other), rather Underground conductors are offset from each other. The mix of incomplete Duct data and offset Underground Conductor capture, required a complex geospatial method to determine Underground route length and this was developed in the prior year in consultation with a geospatial vendor.

Methodology and assumptions

Overhead Route Line Length (same method used as in previous reporting periods). Complex geospatial queries were used to determine route line length. The below diagram, for Overhead route line length outlines how the query relates to assets in the field, including a comparison to how it is visually recorded as data (or layers) in Endeavour Energy's geospatial database. The spatial query reported conductor route length once, regardless of whether there were multiple layers (Transmission, High and Low voltage) or a single layer.



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